d) REMARKS

The claims are 1-3 and 5-26 with claims 1, 7, 13, 16, 17 and 22 being independent. The subject matter of claim 4 has been added to claims 1, 13 and 16 and claim 4 has been cancelled. Claim 2 has been amended to resolve an informality. Reconsideration of the claims is expressly requested.

The Examiner had required restriction between Group I, claims 1-6 and 13-16, drawn to an apparatus; and Group II, claims 7-12 and 17-26, drawn to a film-forming process. Applicants affirm the provisional election of Group I, claims 1-6 and 13-16. Upon an indication of allowability of such claims, the Examiner is requested to rejoin non-elected claims 7-12 and 17-26 under MPEP § 821.04. Applicants also request the Examiner provide them with sufficient time to amend the non-elected claims, if need be, to be commensurate in scope with the allowed claims.

The Examiner has objected to the drawings on the grounds that the evacuation means, first evacuation piping, second evacuation piping and piping connection part must be shown. Claims 1-6 were rejected under Rule 112, first paragraph, on the ground that the same features identified above have not been specifically identified.

Without conceding the propriety of that objection, Applicants have amended the specification to identify the vacuum pump 106 as an evacuation means; pipe 102 as a first evacuation piping; pipe 103 as a downstream-side second evacuation piping; 104 as a flange joint as a piping connection part and sight glass window 622 as another kind of piping connection part. It is believed that the objections to the drawings and claims has now been resolved.

Claim 2 was rejected under Rule 112, second paragraph, as being indefinite as to whether the evacuation piping recited is the first or second evacuation piping. Claim 2 has now been amended to provide that the piping is the first or second evacuation piping. Support for this feature is shown at page 15.

The Examiner rejected claims 1, 2, 4 and 16 as being anticipated by Yamazaki '730. Claims 3, 5 and 13-15 were rejected as obvious over Yamazaki in view of Carlson '289. With regard to the features of claim 4 of the present application, the Examiner cited Fig. 4 [0078] of Yamazaki as showing a high temperature trapping device 28 with a piping connection part 52a and a temperature sensor 64. The grounds of rejection are respectfully traversed.

The present invention is characterized in that the temperature sensor is provided on the side downstream to the piping connection part of the evacuation piping to detect leaks from welds and joints from piping connecting portions of the apparatus. Oxygen, supplied from the atmosphere at the leak-generating portion, reacts with unreacted reaction gas for film formation, thereby generating a temperature rise. Leak generation can be detected by measuring such temperature rise with a temperature sensor. Since leaks are likely to occur at connecting portions of the evacuation piping, a temperature sensor is provided on the side downstream to the piping connection part of the evacuation piping, whereby leak generation can be best detected. As shown in Figs. 1B, 5B and 6B where flange joints, welds and the like are present in the first or second piping connection part, leaks can occur and a sensor is provided downstream of a pipe connection joint or flange

(part) to detect temperature rise from reaction of oxygen with unreacted film-forming gases.

Yamazaki '730 A1 discloses that a high temperature trap is provided between a chamber and a vacuum pump and a low temperature trap is provided between a vacuum pump and a decontaminating device , respectively, and a temperature sensor is provided to control a temperature of the high temperature trap 28 [0084]. However, in this embodiment, since the trap (including an evacuation piping) is temperature-controlled, a temperature rise caused by a leak cannot be detected. Further, although it is disclosed that a sensor is mounted at a trap, it is not disclosed that the sensor is mounted on a side downstream of the piping connection part, a flange or joint, such a position being crucial to the present invention.

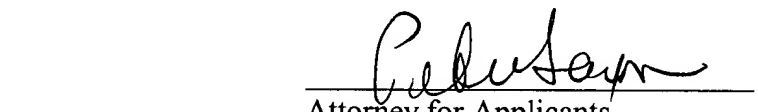
In Fig. 4 of the Yamazaki, sensor 64 is mounted on trap body 56. The high temperature trap is typically heated to 180°C to 300°C, see [0060] [0086] and, especially to 200°C. To the contrary, the instant temperature sensor measures temperature generally only from 0 to 150°C, page 19, lines 5-6. In present Fig. 2, a leak caused a temperature rise of 20°C from 30°C to 50°C. Within the large, heated trap employing a heater coil to heat body 56 and trapping plates 60 as in Yamazaki which is kept at from 180°C to 300°C, the very small energy generated by oxygen reacting with unreacted gases would clearly be insufficient to cause an entire trap to jump 20°C. Further , in the trap, substances in the exhaust gases are already reacting and decomposing, which would not make it possible to distinguish between that and a leak.

Carlsen '289 merely discloses a mechanism for detecting a back flow of oxygen when a decompression cylinder is used. Specifically, a temperature sensor is provided at the decompression cylinder . A leak is detected when a gas back-flows by heat caused by a reaction of PH_3 with O_2 and a gas supply valve is closed to detect the leak. However, Carlsen '289 neither discloses nor suggests that a temperature sensor is provided on a side downstream to a connection portion of an evacuation piping.

Wherefore, Applicants submit that none of the references, whether considered alone or in combination, discloses or suggests the present claimed invention nor renders it unpatentable. Accordingly, it is respectfully requested that the claims be allowed and that the case be passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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